

REMARKS AND ARGUMENTS

Applicants note that Examiner has rejected claims 1 to 4, 11 and 19 as being clearly anticipated by two prior art patents, namely US Patent 6,650,195 and US Patent 6,225,871. Examiner has also objected to claims 5 to 10, 12 to 18 and 20 as being dependent upon rejected base claims, which would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

In response, Applicants respectfully traverse all rejections and request reconsideration of the application. Applicants also respectfully submit amendments to claims 1 and 19 to more distinctly and clearly define the invention therein. Claims 11 to 18 are cancelled and new claims 21 to 24 are added. Support for the amendments can be found in the specification, original claims and drawings and Applicants submit that no new matter is added in this respect.

35 U.S.C. § 102 Rejections

In the Office Action, the Examiner rejects pending claims 1, 11 and 19 under 35 U.S.C. § 102 as being clearly anticipated by Brunn et al., US Patent 6,650,195 (hereinafter referred to as “Brunn”). The Examiner has also rejected pending claims 1 to 4 as being clearly anticipated by Chien, US Patent 6,225,871 (hereinafter referred to as “Chien”).

Both Brunn and Chien teach a voltage-controlled oscillator for radio frequency operation.

Brunn teaches a voltage-controlled oscillator having a core that consists of two cross-coupled transistor pairs. Brunn further discloses that the oscillator includes a current source. The current source is coupled to a current sink to provide isolation of the oscillator from the effects of voltage variations caused by a power supply. The current source and current sink are therefore interconnected and controlled by a common voltage.

Chien also teaches a voltage-controlled oscillator that has a core with two cross-coupled transistor pairs. Chien further discloses that the oscillator has a single

current source that is coupled to a power supply to control the frequency of the oscillator.

Amended independent claims 1 and 19 of Applicants' invention teach a voltage-controlled oscillator circuit and a method of configuration thereof, respectively, having a different topology as the prior art patents. Amended claims 1 and 19 respectively describe a voltage-controlled oscillator circuit and a method of configuration thereof for radio frequency operation. The voltage-controlled oscillator circuit comprises at least one inductor and at least one varactor connected in parallel with the at least one inductor. A pair of p-channel MOS transistors is connected across the at least one varactor, each p-channel transistor having source, drain, and gate terminals, wherein the drain terminal of the first of the pair of p-channel MOS transistors is connected to the gate terminal of the second of the pair of p-channel MOS transistors and the drain terminal of the second of the pair of MOS transistors is connected to the gate terminal of the first of the pair of MOS transistors. The voltage-controlled oscillator circuit also includes biasing means for providing a biasing current thereto and substantially widening the tuning range thereof, the biasing means configured according to a biasing n-channel MOS transistor connected to the supply voltage and a self-biasing p-channel MOS transistor connected to the reference voltage, wherein the biasing means is connected to the pair of p-channel MOS transistor and the at least one inductor.

Brunn teaches a voltage-controlled oscillator having interconnected current source and sink but does not teach or suggest, according to amended claims 1 and 19, a voltage-controlled oscillation circuit and method of configuration thereof that comprises "biasing means for providing a biasing current to the voltage-controlled oscillator circuit . . . , the biasing means [] configured according to a biasing n-channel MOS transistor connected to the supply voltage and a self-biasing p-channel MOS transistor connected to the reference voltage, wherein the biasing means is connected to the pair of p-channel MOS transistor and the at least one inductor" as recited in amended independent claims 1 and 19. Brunn, on the contrary, teaches direct coupling of the current source and current sink to a cross-coupled transistor pair respectively, and not to the at least one inductor for increasing the tuning range of the

voltage-controlled oscillator circuit, according to lines 8 to 10 of page 6 and lines 2 to 5 of page 7 of the present application.

Chien teaches a voltage-controlled oscillator using a single current source connected to a power supply but does not teach or suggest, according to amended claims 1 and 19, a biasing means that is connected to the at least one inductor. Chien does not connect any biasing means to the inductor. Instead, Chien teaches connecting a capacitor to the inductor to form a tank circuit for avoiding the use of varactors in voltage-controlled oscillators, according to lines 58 to 60 of column 2 of Chien's patent.

Furthermore, Applicants respectfully submit that the distinctions between the voltage-controlled oscillator circuit for radio frequency operation recited in amended claims 1 and 19 and the teachings of Brunn and Chien are apparent, obvious and manifold. Both Brunn and Chien teach a voltage-controlled oscillator having a core with two cross-coupled transistor pairs. In contrast to the teachings of Brunn and Chien, amended claims 1 and 19 of the present application describe the use of at least one inductor and one varactor such that only one cross-couple transistor pair is required.

Additionally, neither Brunn's nor Chien's patents teaches using a self-biasing p-channel transistor, according to lines 26 to 28 of page 5 and lines 1 to 2 of page 7 of the present application, for widening the tuning frequency range of the voltage controlled oscillator circuit, as described in amended claims 1 and 19.

The merits of the invention described above result from the unique configuration of the invention as described in amended claims 1 and 19. The unique configuration is not taught by Brunn or Chien and therefore is not anticipated by either Brunn or Chien.

In accordance with the submitted amendments to claims 1 and 19 and the accompanying response explaining to Examiner of the distinctions therein over Brunn and Chien, the rejections under 35 U.S.C. §102 of claims 1 and 19 are consequently disposed of and these claims are in condition for allowance. Applicants respectfully

submit that other 35 U.S.C. §102 rejections for dependent claims 2 to 4 and objections to dependent claims 5 to 10 and 20 are consequently disposed of and, together with new claims 21 to 24, are therefore in condition for allowance.

Miscellaneous

Applicant respectfully asserts that newly added claims 21 – 24 are patentable over the cited prior art as each of the newly added claims ultimately depends from claim 19, which has already been shown to be patentable over the cited prior art.

Conclusion

In accordance with amended claims 1 and 19 and accompanying response to the Office Action, reconsideration and withdrawal of rejections to claims 1 to 10 and 19 to 20 under 35 U.S.C. § 102 and allowance of all new claims are respectfully requested.

Respectfully submitted,

NATH & ASSOCIATES, PLLC

Date: May 13, 2005
NATH & ASSOCIATE PLLC
1030 15th Street N.W., 6th Floor
Washington, D.C. 20005
(202) 775-8383

By:



Harold L. Novick
Registration No. 26,011
Derek Richmond
Registration No. 45,771
Customer No. 20529